DETERMINATION OF FLAKINESS INDEX AND ELONGATION INDEX OF COARSE AGGREGATE(IS 2386 (Part 1) 1963 (RA 2007)

Lab ID	:	**CP-RW-2018-07-30-07** **Date: 01-08-18**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drains at Agrahara Village Ashwathkatte Opp. Road in Ward No.05 Byatarayanapura Sub Division.
Agency	:	Sri. Gopireddy, #03, 1st Cross, 1st main, Ramachandrappa layout, Veeranapalya, Arabic college (P), Bangalore-560045.
Customer Reference	:	BBMP/EE/BTP/WO/65/2018-19
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	30-07-18
Sample ID No	:	2018-07-30-07/01
Type of Mix	:	Coarse Aggregate for WMM (Wet Mix Macadam)
Date of test	:	30-07-18

Result:

Index	Percentage of Flakiness and Elongation Index	Secified limits as per MORTH specification table 400-12
Flakiness Index	12.8%	Combined Flakiness & Elongation Index for WMM is Maximum 35%
Elongation Index	12.5%	
Combined Flakiness and Elongation Index for WMM	25.3%	

Note:-
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Quality Manager

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TEST RESULTS OF GRADATION FOR SDBC
IS 2386 (Part 1) 1963 (RA 2007)

Lab ID	:	**CP-RW-2018-08-06-03** **Date: 08-08-18**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drains at Agrahara Village Ashwathkatte Opp. Road in Ward No.05 Byatarayanapura Sub Division.
Agency	:	Sri. Gopireddy, #03, 1st Cross, 1st main, Ramachandrappa layout, Veeranapalya, Arabic college (P), Bangalore-560045.
Customer Reference	:	BBMP/EE/BTP/WO/65/2018-19
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	06-08-18
Sample ID No	:	2018-08-06-03/01
Type of Mix	:	SDBC-Plant (Semi Dense Bituminous Concrete)
Date of test	:	06-08-18
Weight of Sample	:	5000 Grams

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-15(grading-2)
13.2	0	0	0.0	100.0	100
9.5	410	410	8.2	91.8	90-100
4.75	2187	2597	51.9	48.1	35-51
2.36	1038	3635	72.7	27.3	24-39
1.18	525	4160	83.2	16.8	15-30
0.3	503	4663	93.3	6.7	9-19
0.075	169	4832	96.6	3.4	3-8
PAN	168	5000	100.0	0.0	0

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PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR SEMI DENSE BITUMINOUS CONCRETE

Lab ID	:	**CP-RW-2018-08-06-03** **Date: 09-08-18**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drains at Agrahara Village Ashwathkatte Opp. Road in Ward No.05 Byatarayanapura Sub Division.
Agency	:	Sri. Gopireddy, #03, 1st Cross, 1st main, Ramachandrappa layout, Veeranapalya, Arabic college (P), Bangalore-560045.
Customer Reference	:	BBMP/EE/BTP/WO/65/2018-19
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	06-08-18
Sample ID No	:	2018-08-06-03/01
Type of Mix	:	SDBC (Semi Dense Bituminous Concrete)
Date of test	:	06-08-18

Physical Requirements fo Coarse Aggregate for Semi Dense Bituminous Concrete

Property	Test	Result	Specification	Method of Test
Partical Shape	Flakiness Index	11.1	Combined Flakiness & Elongation Index for DBM is Maximum 35%	IS:2386 Part I
	Elongation Index	9.5		
Strength	Aggregate Impact Value	21.8	Maximum 30%	IS:2386 Part IV
Specific gravity	Specific gravity	2.58	Maximum 2.7	IS:2386 Part III
Water Absorption	Water Absorption	0.31	Maximum 2%	IS:2386 Part III

Note:-

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TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

Lab ID	:	**CP-RW-2018-08-06-03** **Date: 09-08-18**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drains at Agrahara Village Ashwathkatte Opp. Road in Ward No.05 Byatarayanapura Sub Division.
Agency	:	Sri. Gopireddy, #03, 1st Cross, 1st main, Ramachandrappa layout, Veeranapalya, Arabic college (P), Bangalore-560045.
Customer Reference	:	BBMP/EE/BTP/WO/65/2018-19
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	06-08-18
Sample ID No	:	2018-08-06-03/01
Type of Mix	:	SDBC (Semi Dense Bituminous Concrete)
Date of test	:	06-08-18

Type of Binder	:	60/70
% of Binder Used	:	5.0%
Weight of Aggregate	:	200.0 gm
Weight of Binder	:	10.0 gm
Temperature of water bath	:	40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
1	99.0	1.0	98.8	Minimum Retained Coating 95%
2	98.5	1.5		
3	99.0	1.0		

Note:-
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TESTS RESULTS ON STABILITY OF MIX

Lab ID	:	**CP-RW-2018-08-06-03** **Date: 09-08-18**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drains at Agrahara Village Ashwathkatte Opp. Road in Ward No.05 Byatarayanapura Sub Division.
Agency	:	Sri. Gopireddy, #03, 1st Cross, 1st main, Ramachandrappa layout, Veeranapalya, Arabic college (P), Bangalore-560045.
Customer Reference	:	BBMP/EE/BTP/WO/65/2018-19
Source of Sample	:	Hot Mix Plant, Bangalore
Sample Condition	:	Satisfactory
Date of Receipt	:	06-08-18
Sample ID No	:	2018-08-06-03/01
Type of Mix	:	SDBC (Semi Dense Bituminous Concrete)
Date of test	:	06-08-18

The results of the tests conducted on the Semi Dense Bituminous Concrete mix sample are as follow

Sl.No	Particulars of observations	TEST 1	TEST 2	Secified limits as per MORTH specification table 500-16
1	Marshal Stability at 60°C, KN	10.54	10.11	8.2KN(min)
2	Marshal flow at 60°C, mm	3.22	3.29	2-4
3	Percent air Voids	4.59	4.25	3-5
4	Percent Voids in mineral Aggregate(VMA %)	13.88	13.94	13-15
5	Percent Voids filled with Bitumen(VFB %)	70.32	70.0	65-75
6	Density, g/cc	2.26	2.24	–

Note:-
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TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR SDBC (IS 2386:(Part 1) 1963 (RA2011)

Lab ID : **CP-RW-2018-08-10-02** **Date: 11-08-18**

Customer : Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.

Address : Byatarayanapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Roads and Drains at Agrahara Village Ashwathkatte Opp. Road in Ward No.05 Byatarayanapura Sub Division.

Agency : Sri. Gopireddy, #03, 1st Cross, 1st main, Ramachandrappa layout, Veeranapalya, Arabic college (P), Bangalore-560045.

Customer Reference : BBMP/EE/BTP/WO/65/2018-19

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 10-08-18

Sample ID No : 2018-08-10-02/01

Type of Mix : SDBC (Semi Dense Bituminous Concrete)

Date of test : 10-08-18

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	502	501
2	Weight of the sample After extraction	B	478	477
3	Bitumen percentage	$\frac{A-B}{A} \times 100$	4.78	4.79
4	Average percentage	%	4.8	

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Lab ID : **CP-RW-2018-08-10-02** **Date: 11-08-18**

Sample ID No : **2018-08-10-02/01**

AFTER EXTRACTION(Trail-1)

Weight of Sample(gm) : 478

IS Sieve Size(mm)	Weight Retained(gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-15(grading-2)
13.2	0	0	0	100.0	100
9.5	31	31	6.49	93.5	90-100
4.75	213	244	51.05	49.0	35-51
2.36	63	307	64.23	35.8	24-39
1.18	39	346	72.38	27.6	15-30
0.3	71	417	87.24	12.8	9-19
0.075	34	451	94.35	5.6	3-8
PAN	27	478	100.00	0.0	0

AFTER EXTRACTION(Trail-2)

Weight of Sample(gm) : 477

IS Sieve Size(mm)	Weight Retained(gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-15(grading-2)
13.2	0	0	0	100.0	100
9.5	29	29	6.08	93.9	90-100
4.75	215	244	51.15	48.8	35-51
2.36	62	306	64.15	35.8	24-39
1.18	41	347	72.75	27.3	15-30
0.3	66	413	86.58	13.4	9-19
0.075	32	445	93.29	6.7	3-8
PAN	32	477	100.00	0.0	0

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TEST REPORT ON BITUMEN

Lab ID	:	**CP-2018-08-02-02** **Date: 03-08-18**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drains at Agrahara Village Ashwathkatte Opp. Road in Ward No.05 Byatarayanapura Sub Division.
Agency	:	Sri. Gopireddy, #03, 1st Cross, 1st main, Ramachandrappa layout, Veeranapalya, Arabic college (P), Bangalore-560045.
Customer's Reference	:	BBMP/EE/BTP/WO/65/2018-19
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	02-08-18
Sample ID No	:	2018-08-02-02/01
Sample Type	:	Bitumen
Reference to BIS codes	:	IS: 1201-1220(1978) (Reaffirmed-2004)
Date of test	:	02-08-18

Test Results

Sl.no	Name of Test	Result	Requirements as per IS:73-2013
1	Penetration at 25°C , in 1/10th mm	**64**	60 to 70
2	Softening Point, °C	**51.2**	Min. 40°C
3	Ductility, cm	**98**	Min. 75cm
4	Flash point, °C	**245**	Min. 220°C
	Fire point, °C	**272**	

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TEST REPORT OF AGGEGRATE IMPACT VALUE
IS: 2386 Part IV

Lab ID	:	**CP-RW-2018-07-30-07** **Date: 01-08-18**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drains at Agrahara Village Ashwathkatte Opp. Road in Ward No.05 Byatarayanapura Sub Division.
Agency	:	Sri. Gopireddy, #03, 1st Cross, 1st main, Ramachandrappa layout, Veeranapalya, Arabic college (P), Bangalore-560045.
Customer Reference	:	BBMP/EE/BTP/WO/65/2018-19
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	30-07-18
Sample ID No	:	2018-07-30-07/01
Type of Mix	:	Coarse Aggregate for WMM (Wet Mix Macadam)
Date of test	:	30-07-18

Sl.No	Particulars of observations	Index	TEST 1	TEST 2
1	Total weight of the surface dry sample sample (passing 12.5 mm and retained on 10mm sieve)	A	300.2	300.2
2	Weight of fraction passing 2.36mm sieve After giving 15 blows	B	73.9	74.0
3	weight of fraction retained 2.36mm sieve After giving 15 blows	C	225.9	225.8
4	Total weight of (B+C) is less than the initial weight (Weight A) by more than one gram the result shall be discarded and a fresh test made.	A-(B+C)	0.4	0.4
5	Aggregate impact value	(B/A)*100	24.6	24.7
6	Aggregate impact value (Mean of two tests)	Pecentage	24.6	

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TEST RESULTS OF GRADATION FOR WMM

Lab ID	:	**CP-RW-2018-07-30-07** **Date: 01-08-18**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drains at Agrahara Village Ashwathkatte Opp. Road in Ward No.05 Byatarayanapura Sub Division.
Agency	:	Sri. Gopireddy, #03, 1st Cross, 1st main, Ramachandrappa layout,
Customer Reference	:	BBMP/EE/BTP/WO/65/2018-19
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	30-07-18
Sample ID No	:	2018-07-30-07/01
Type of Mix	:	WMM (Wet Mix Macadam)
Date of test	:	30-07-18
Oven Dry Weight	:	10000 Grams

IS Sieve Size(mm)	Weight Retained (gm)	Cumulative Weight Retained (gm)	% Cumulative Weight Retained	% Passing	Spec.I.Vide Table 400.13 MORTH Specification
53	0	0	0.0	100.0	100
45	315	315	3.2	96.9	95-100
22.4	2259	2574	25.7	74.3	60-80
11.2	2179	4753	47.5	52.5	40-60
4.75	2251	7004	70.0	30.0	25-40
2.36	1490	8494	84.9	15.1	15-30
0.6	600	9094	90.9	9.1	8-22
0.075	906	10000	100.0	0.0	0-5

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Format No: CP/TF/01

TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : **CP-2018-08-04-04** **Date: 09/08/2018**

Customer : Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.

Address : Byatarayanapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Roads and Drains at Agrahara Village Ashwathkatte Opp. Road in Ward No.05 Byatarayanapura Sub Division.

Agency : Sri. Gopireddy, #03, 1st Cross, 1st main, Ramachandrappa layout, Veeranapalya, Arabic college (P), Bangalore-560045.

Customer's Reference : BBMP/EE/BTP/WO/65/2018-19

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 04-08-18

Sample ID No : 2018-08-04-04 /01

Customer ID : RMC

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M20 / 7 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 09/08/2018

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	RMC	M20	02/08/2018	09/08/2018	150.22 X 150.54 X 150.55	22614	8.145	407.1	18.0	18.4
2	RMC	M20	02/08/2018	09/08/2018	150.22 X 150.54 X 150.55	22614	8.169	411.6	18.2	
3	RMC	M20	02/08/2018	09/08/2018	150.22 X 150.54 X 150.55	22614	8.144	429.7	19.0	

Note:

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Format No: CP/TF/01

TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : **CP-2018-08-04-04** **Date: 16/08/2018**

Customer : Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.

Address : Byatarayanapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Roads and Drains at Agrahara Village Ashwathkatte Opp. Road in Ward No.05 Byatarayanapura Sub Division.

Agency : Sri. Gopireddy, #03, 1st Cross, 1st main, Ramachandrappa layout, Veeranapalya, Arabic college (P), Bangalore-560045.

Customer's Reference : BBMP/EE/BTP/WO/65/2018-19

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 04-08-18

Sample ID No : 2018-08-04-04 /02

Customer ID : RMC

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M20 / 14 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 16/08/2018

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	RMC	M20	02/08/2018	16/08/2018	150.69 X 150.87 X 150.22	22735	8.120	509.3	22.4	22.3
2	RMC	M20	02/08/2018	16/08/2018	150.63 X 150.40 X 150.54	22655	8.110	493.9	21.8	
3	RMC	M20	02/08/2018	16/08/2018	150.88 X 150.78 X 150.90	22750	8.150	514.1	22.6	

Note:

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TEST REPORT OF FINE AGGREGATE

Lab ID : **CP-2018-07-25-07** **Date: 28-07-18**

Customer : Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.

Address : Byatarayanapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Roads and Drains at Agrahara Village Ashwathkatte Opp. Road in Ward No.05 Byatarayanapura Sub Division.

Agency : Sri. Gopireddy, #03, 1st Cross, 1st main, Ramachandrappa layout, Veeranapalya, Arabic college (P), Bangalore-560045.

Customer's Reference : BBMP/EE/BTP/WO/65/2018-19

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 25-07-18

Sample ID No : 2018-07-25-07 /03

Sample Type : Fine Aggregate

Reference to BIS codes : IS 383 : 2016 (Specification for Coarse and fine Aggregates)
IS: 2386 :1963(Part - 1, 3) RA2012
IS 2386 Part 1: Particle Size and Shape
IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption

Date of test : 25-07-18

Total weight taken : 1000 grams

Sl.no	Sieve Size	Weight Retained (gms)	Cumulative Weight Retained (gms)	% Cumulative Weight Retained	% Passing	Requirement as per IS 383:2016			
						Grading Zone I	Grading Zone II	Grading Zone III	Grading Zone IV
1	10 mm	0	0	0.0	100.0	100	100	100	100
2	4.75 mm	83	83	8.3	91.7	90-100	90-100	90-100	95-100
3	2.36 mm	134	217	21.7	78.3	60-95	75-100	85-100	95-100
4	1.18 mm	166	383	38.3	61.7	30-70	55-90	75-100	90-100
5	600 micron	179	562	56.2	43.8	15-34	35-59	60-79	80-100
6	300 micron	187	749	74.9	25.1	5-20	8-30	12-40	15-50
7	150 micron	154	903	90.3	9.7	0-10	0-10	0-10	0-15
8	Pan	97	1000	100.0	0.0	---	---	---	---

Result :The tested Sample Conforms to Grading Zone II

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TEST REPORT OF FINE AGGREGATE

Lab ID : **CP-2018-07-25-07** **Date: 28-07-18**

Sample ID No : 2018-07-25-07 /03

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS 383:2016
1	Water Absorption(%)	1.99	_
2	Specific Gravity	2.55	_
3	Material finer than 75 micron(%)	5.1	Uncrushed fine Aggregate Max 3%, Crushed Fine aggregate Max 15%, Mixed Fine aggregate Max 12%, Manufactured Fine aggregate Max 10%

Note:
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TEST REPORT ON COARSE AGGREGATES

Lab ID	:	**CP-2018-07-25-07** **Date: 28-07-18**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drains at Agrahara Village Ashwathkatte Opp. Road in Ward No.05 Byatarayanapura Sub Division.
Agency	:	Sri. Gopireddy, #03, 1st Cross, 1st main, Ramachandrappa layout, Veeranapalya, Arabic college (P), Bangalore-560045.
Customer Reference	:	BBMP/EE/BTP/WO/65/2018-19
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	25-07-18
Sample ID No	:	2018-07-25-07 /02(b)
Sample Type/ Size	:	20mm down size coarse aggregate
Reference to BIS codes	:	IS: 383:2016 (Specification for Coarse and fine Aggregates) IS: 2386 :1963(Part - 1,3,4) RA2011 IS 2386 Part 1: Particle Size and Shape IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption IS 2386 Part 4: Mechanical Properties
Date of test	:	25-07-18

SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 20MM DOWN COARSE AGGREGATE:

Total weight taken : 5000 grams

Sample No.	Sieve No.	Weight Retained in gms	Cumulative Weight Retained in gms	% Cumulative Weight Retained	% Passing	Required as per IS 383:2016
1	40 mm	0	0	0	100	100
2	20 mm	254	254	5.1	94.9	90-100
3	10 mm	2435	2689	53.8	46.2	25-55
4	4.75 mm	1989	4678	93.6	6.4	0-10
5	Pan	322	5000	100	0	–

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TEST REPORT ON COARSE AGGREGATES

Lab ID : **CP-2018-07-25-07** **Date: 28-07-18**

Sample ID No : 2018-07-25-07 /02(b)

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS:383-2016
1	Flakiness Index(%)	**12.5**	Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate
2	Elongation Index(%)	**11.8**	
3	Specific Gravity	**2.66**	–
4	Bulk Density(Loose) (Kg/l)	**1.46**	–
5	Bulk Density(Compacted) (Kg/l)	**1.49**	–
6	Water Absorption(%)	**0.23**	–
7	Aggregate crushing Value(%)	**22.5**	Max 30% for Aggregates to be used in concrete for wearing Surface, In case Aggregate Crushing Value Exceeds 30% then the test for ten percent fines should be conducted for Aggregates to be used in concrete other than for wearing Surface.
8	Aggregate Impact Value(%)	**21.7**	30% for Aggregates to be used in concrete for wearing Surface, 45% for Aggregates to be used in concrete other than for wearing Surface.

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Quality Manager

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TEST REPORT ON COARSE AGGREGATES

Lab ID	:	**CP-2018-07-25-07** **Date: 28-07-18**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drains at Agrahara Village Ashwathkatte Opp. Road in Ward No.05 Byatarayanapura Sub Division.
Agency	:	Sri. Gopireddy, #03, 1st Cross, 1st main, Ramachandrappa layout, Veeranapalya, Arabic college (P), Bangalore-560045.
Customer's Reference	:	BBMP/EE/BTP/WO/65/2018-19
Source of Sample	:	Sample supplied by Agency
Sample condition	:	Satisfactory
Date of Receipt	:	25-07-18
Sample ID No	:	2018-07-25-07 /02(a)
Sample Type	:	40mm down size coarse aggregate
Reference to BIS codes	:	IS: 383:2016 (Specification for Coarse and fine Aggregates) IS: 2386 :1963(Part - 1,3,4) RA2011 IS 2386 Part 1: Particle Size and Shape IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption IS 2386 Part 4: Mechanical Properties
Date of test	:	25-07-18

SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 40MM DOWN COARSE AGGREGATE:

Total weight taken : 15000 grams

Sample No.	Sieve No.	Weight Retained in gms	Cumulative Weight Retained in gms	% Cumulative Weight Retained	% Passing	Required as per IS 383:2016
1	80 mm	0	0	0.0	100	100
2	40 mm	321	321	2.1	97.9	90-100
3	20 mm	5663	5984	39.9	60.1	30-70
4	10 mm	4536	10520	70.1	29.9	10-35
5	4.75 mm	4153	14673	97.8	2.2	0-5
6	Pan	327	15000	100.0	0	---

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TEST REPORT ON COARSE AGGREGATES

Lab ID : **CP-2018-07-25-07** **Date: 28-07-18**

Sample ID No : 2018-07-25-07 /02(a)

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS:383-2016
1	Flakiness Index(%)	12.6	Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate
2	Elongation Index(%)	11.8	
3	Specific Gravity	2.67	–
4	Bulk Density(Loose) (Kg/l)	1.51	–
5	Bulk Density(Compacted) (Kg/l)	1.53	–
6	Water Absorption(%)	0.24	–

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TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

Lab ID	:	**CP-2018-07-25-07** **Date: 28-07-18**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP,
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drains at Agrahara Village Ashwathkatte Opp. Road in Ward No.05 Byatarayanapura Sub Division.
Agency	:	Sri. Gopireddy, #03, 1st Cross, 1st main, Ramachandrappa layout, Veeranapalya, Arabic college (P), Bangalore-560045.
Customer's Reference	:	BBMP/EE/BTP/WO/65/2018-19
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	25-07-18
Sample ID No	:	2018-07-25-07 /01
Sample Type	:	Birla Super 53grade
Reference to BIS codes	:	IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification , IS 4031 (Part 1,2 3,4,5, 6,11):1988 IS 4031 Part 1 DETERMINATION OF FINENESS BY DRY SIEVING, Clause 4.4 IS 4031 Part 2, Determination of Fineness by Blaine Air Permeability Method, Clause 5 IS 4031 Part 3, Determination of Soundness, Clause 5,Clause 6 IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5 IS 4031 Part 5, Determination of Initial & Final Setting Time, Clause 5 IS 4031 Part 11,DETERMINATION OF DENSITY , Clause 6
Date of test	:	26-07-18
Environmental Conditions during test	:	Temperature: 26°C Humidity: 72%

Sl.No.	Physical properties	Results	Requirement as per IS 12269: 2013
1	Fineness by dry sieving (%)	1.44	–
2	Finess by Air permeablity method (m^2/kg,Min)	275.6	225m^2/kg, Min
3	Density (gm/cc)	3.13	–
4	Standard Consistency (%)	28.0%	Not specified
5	Initial Setting time	175 minutes	Not less than 30 minutes
6	Final Setting time	280 minutes	Not more than 600 minutes
7	Soundness (Le Chatelier's Method)	1mm	Not more than 10 mm

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TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

Lab ID	:	**CP-2018-07-25-07** **Date: 23-08-18**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Roads and Drains at Agrahara Village Ashwathkatte Opp. Road in Ward No.05 Byatarayanapura Sub Division.
Agency	:	Sri. Gopireddy, #03, 1st Cross, 1st main, Ramachandrappa layout, Veeranapalya, Arabic college (P), Bangalore-560045.
Customer's Reference	:	BBMP/EE/BTP/WO/65/2018-19
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	25-07-18
Sample ID No	:	2018-07-25-07 /01
Sample Type	:	Birla Super 53grade
Reference to BIS codes	:	IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification , IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5 IS 4031 Part 6, Determination of Compressive Strength, Clause 6
Date of test	:	26-07-18
Environmental Conditions during test	:	Temperature: 26°C Humidity: 72%

Compressive Strength

Sl.No.	Physical properties	Results	Requirement as per IS 12269: 2013
1	3 Days	28.5N/mm^2	Not less than 27 N/mm^2
2	7 Days	39.0N/mm^2	Not less than 37 N/mm^2
3	28 Days	56.5N/mm^2	Not less than 53 N/mm^2

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